

The central role of fertility control in reproductive management of captive animal populations

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Reproductive management is central to the success of captive breeding programs. Reaching genetic and demographic goals depends on reproduction at specific times by specific individuals in the population. In any given year some animals are recommended to breed while others are not. Preventing reproduction may be as simple as separating males from females, but even that option carries risks of future infertility for females not allowed to reproduce for regularly. Reversible contraception is the preferable option in many cases, especially for species that naturally live in long-term social groups. However, identifying the appropriate method for each species presents challenges due to profound species differences in response to treatment. Progestin-based methods, such as melengestrol acetate (MGA) implants (Wildlife Pharmaceuticals) and Depo-Provera injections (Pfizer) have been used in zoos since the mid-1970s. They are effective in females of all species tested, although equids only respond to the synthetic progestin altrenogest (ReguMate: Merck), However, the safety of progestins may vary across species. For example, female carnivores treated with progestins may develop uterine and mammary pathology, so alternative methods had to be found. Gonadotropin hormone releasing hormone (GnRH) agonists (e.g., Suprelorin: Virbac) are currently the best option, since they down-regulate the sex steroid hormone axis following a brief stimulatory phase. Although highly effective and safe, time to reversal following Suprelorin treatment varies greatly by species and by individual, a major concern for genetically valuable females who may soon receive a breeding recommendation. Ungulates are often treated with the porcine zona pellucida (PZP) vaccine (Science and Conservation Center). PZP has the advantage that it can be delivered by dart, avoiding the need for restraint or anesthesia, and it permits ovulatory cycles and estrous behavior to continue. For primates, especially the great apes, combination birth-control pills produced for women are the most popular option. The GnRH agonists are the only method found effective for males, although males of the ungulate species tested do not respond. Thus, although there are several types of products currently in use in captive breeding programs, more options are needed to better tailor treatment by species, gender and individual case.